BRICKFIELD, DARLAND FARM
GILLINGHAM, MEDWAY

Extended Phase 1 Habitat Survey
and
Bat Building Assessment

For and on behalf of
Hume Planning Consultancy Ltd

April 2016

CORYLUS ECOLOGY

Unit A3 Speldhurst Business Park, Langton Road, Speldhurst, Tunbridge Wells, Kent. TN3 0NR
Telephone: 01892 861868 E-mail: info@corylus-ecology.co.uk

Director: H G Wrigley (née Lucking) BSc. MIEEM

Corylus Ecology Ltd Registered in England No 5005553
Registered Office: Henwood House, Henwood, Ashford Kent TN24 8DH
VAT Reg No. 862 2486 14

CONTENTS

		Page Number
1.0	**Introduction**	**1**
2.0	**Methodology**	**2**
3.0	**Results**	**4**
4.0	**Evaluation and Recommendations**	**10**
5.0	**Conclusion**	**17**

References

Tables

Figures

Figure 1 – Phase 1 Habitat Map

Figure 2 – Annotated Photographs

Figure 3 – Ecological Enhancement Plan

Appendices

Appendix 1 – Reptile Legislation

Appendix 2 – Nectar rich plants list

1.0 INTRODUCTION

1.1 Corylus Ecology was requested by Hume Planning to undertake an Extended Phase 1 Habitat Survey and Bat Building Assessment of land at Brickfield, Darland Farm, Gillingham, Medway, hereinafter referred to as 'the Site'. The Site is located at OS grid reference TQ 78152 65743.

1.2 The Site is within a semi-rural environment to the south of the town of Gillingham. The Site is bounded by residential dwellings to the east and west, Pear Tree land to the south and a Local Wildlife Reserve 'Darland Banks' to the north. The survey area measures approximately 4.05ha and consists predominantly of an arable field with trees, tall ruderal and scrub vegetation at the margins, and a cluster of dilapidated farm buildings in the north-east corner of the Site. The proposals for the Site involve the construction of residential properties within the Site.

1.3 The Extended Phase 1 Habitat Survey provides information relating to the habitats within the Site and identifies potential for and, if apparent, evidence of use by protected species. In addition, it provides recommendations for further surveys if required. The Bat Building Survey looks for evidence of and potential for roosting bats during daylight hours.

Scope of Survey

1.4 The objectives of the survey were to:

- Classify and map the habitats within the Site according to those within the Phase 1 manual;
- Determine the potential for protected species to occur within the Site;
- Assess the buildings for evidence of use by bats; and
- Suggest appropriate recommendations and further surveys where necessary.

2.0 METHODOLOGY

2.1 Desk Study

2.1.1 Records of protected species and designated sites were sought from the Kent and Medway Biological Records Centre (KMBRC), encompassing a 3km search area. In addition, information regarding European Protected Species Mitigation licences and Priority Habitats were searched for within 5km of the Site by using freely available internet resource www.MAGIC.gov.uk ('Multi-Agency Geographic Information for the Countryside') interactive mapping service (DEFRA, 2016).

2.2 Extended Phase 1 Habitat Survey

2.2.1 The Site was subject to an Extended Phase 1 Habitat Survey on 25th February 2016. The habitats present on the Site were mapped in accordance with the 'Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit' (Joint Nature Conservation Committee, 2003). Habitat areas and features of topographical and/or ecological interest were described in the form of target notes. These were later used to create botanical species lists by target note area and also to create a colour coded Phase I Habitat map. All nomenclature follows Stace (2010). Non-native or invasive species were also identified and mapped where appropriate.

2.3 Protected Species Surveys

2.3.1 The Extended Phase I Habitat Survey included an assessment of the potential for the Site to support protected species. This type of survey aims to assess the potential for protected species to occur due to the habitats present. It does not include any species specific survey methods that are designed to demonstrate whether the Site is in fact used by such species. As part of the protected species assessment, a ground level investigation of all suitable trees within the Site boundary was carried out to identify bat potential.

2.3.2 With regard to badger *Meles meles*, any holes or scrapes likely to be used by or indicate the presence of badger were searched for, together with any other field signs associated with this species, including latrines, pushes and hairs.

2.4 Bats

Bat Building Assessment

2.4.1 A bat building assessment was also undertaken on 25th February 2016. Full internal and external surveys of two outhouses and two barns were undertaken by Alex Watkinson (Licence number C179184) and Becky Clover of Corylus Ecology. The external surveys consisted of an assessment of areas for potential for bats to roost; these include timber soffits, gable ends and any roof tiles. A search for evidence such as droppings and staining immediately below potential roost areas and for droppings around the base of the buildings, such as on windowsills, was also undertaken. The internal surveys assessed any cavities in

timbers and the roof voids, looking for droppings, staining and bats themselves. Bat droppings were searched for on the top of surfaces (where they are less likely to have been disturbed or damaged) as well as on the ground below. A high powered Clulite torch was used in the search.

Bat Tree Assessment

2.4.2 As part of the protected species assessment, a ground level investigation of all suitable trees within the Site boundary was carried out to identify bat potential. Bats may use any crack or hole (such as woodpecker holes), splits or flaking bark and ivy (JNCC, 2004). Bats will also use different roosts at different times of the year, which can make it difficult to definitely locate bat roosts in trees. Field signs to look for include dark streaking below holes and crevices, or droppings under access points. Chattering noises emitted by bats may also be audible, particularly during the summer. However, even where bats are known to occur, such signs are not always evident.

2.4.3 Trees were placed into one of four categories as described below (Collins, 2016):

High: Trees with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis, and potentially for longer periods of time due to their size, shelter protection, conditions and surrounding habitat.

Moderate: A tree with one or more potential roost sites that could be used by bats, but which is unlikely to support a roost of high conservation status.

Low: A tree of sufficient size and age to contain potential roost features but with none seen from the ground, or features seen with only very limited roosting potential.

Negligible: Negligible features likely to be used by bats.

2.4.4 Trees were also noted if they supported ivy *Hedera Helix*. Ivy can do one of two things; very old, dense ivy can provide cavities for bats between the thick interwoven stems and the tree trunk or it can conceal features in the tree itself. The former would be classed as *Moderate* the latter would be *Low*.

3.0 RESULTS

3.1 Desk Study

Statutory Designated Sites

3.1.2 There are four Local Nature Reserves within a 3km radius of the Site: Darland Banks LNR borders the Site to the north, Ambley Wood LNR is an area of ancient woodland located approximately 700m to the east of the Site, South Wood LNR is 1.6km to the south and Levan Strice LNR is 2.6km to the south-east.

Darland Banks LNR

3.1.3 Darland Banks Local Nature Reserve is a 45ha area of chalk grassland, scrub and woodland on a steep south-west facing escarpment on the North Downs. Calcareous grassland is listed as a priority habitat under the UK's Biodiversity Action Plan. The Site is renowned for its chalk grassland plants: man orchid, lizard orchid, fragrant orchid, green-winged orchid, early-purple orchid, pyramidal orchid, field scabious and black knapweed have all been recorded here. Numerous species of butterfly and moth have been recorded at the LNR, some of which are rare and UK BAP Priority species: chalk hill and common blue, marbled white and green hairstreak butterfly, straw belle and fox moths are examples of the species recorded. The LNR also provides habitat for the Great Green Bush-cricket and Roesel's Bush-cricket.

3.1.4 Birds which have been recorded within the LNR include honey buzzard, hobby, sparrowhawk, willow warbler, swift, swallow, house martin, stonechat, song thrush, yellowhammer, green woodpecker, lesser and greater spotted woodpeckers, linnet, blackcap and lesser whitethroat. Further records of protected species recorded within the LNR are detailed below under 'European Protected Species' (section 3.1.7 – 3.1.10).

SSSI Impact Risk Zones

3.1.5 The Site falls within the Site of Special Scientific Interest (SSSI) Impact Risk Zone for Medway Estuary and Marshes: a SSSI, Special Protection Area (SPA) and RAMSAR Site located approximately 3.5km to the north of the Site. The Site is designated for its internationally important diverse assemblage of wetland birds and invertebrates.

Non-statutory designated sites

Ancient woodland

3.1.6 Within a 3km radius of the Site there are several fragments of ancient woodland. The nearest of these is Grove Wood, which is located approximately 420m to the south-east of the Site. Ambley Wood is an area of ancient woodland located approximately 700m to the east; this woodland is also a Local Nature Reserve.

European Protected Species

3.1.7 One record of a European Protected Species Mitigation (EPSM) Licence was found within a 3km radius of the Site. This licence allows the damage and destruction of a resting place of hazel dormouse *Muscardinus avellanrius* and is active between 2014 and 2018. The licence was issued for an area within Ambley Wood, which is part of Darland Banks LNR, approximately 590m to the north-east of the Site.

Dormice

3.1.8 Dormice have been recorded within 'site 57' of Darland Banks LNR, with the most recent record from 2006 located approximately 420m to the south-east of the Site.

Bats

3.1.9 Kent Bat Group have provided over 300 records of bats from within a 3km radius of the Site. Ten species of bat have been recorded: serotine, Daubenton's, whiskered, Natterer's, Leisler's noctule, Nathusius' pipistrelle, common and soprano pipistrelle and brown long-eared bat. There are 20 records of roosting bats from within a 3km radius of the Site. The nearest of these records is from approximately 200m to the north-west: droppings of serotine were recorded here in 2000. There are four records of hibernating bats from within a 3km radius of the Site. The nearest record is from approximately 350m to the south-west: eight serotines were recorded hibernating here in 1990. There are three records of maternity roosts within a 3km radius and the closest record to the Site is located approximately 840m to the north-west: a maternity roost of serotines was present at an address on King's Road between 1990 and 2000, with a peak count of 29 bats in 1990 and nine bats in 2000.

Reptiles and amphibians

3.1.10 Kent Reptile and Amphibian Group have provided records of common toad, smooth newt, common frog, slow worm, grass snake, adder and common lizard from within a 3km radius of the Site.

- The nearest record of common toad to the Site is from 0.4km to the east, within Darland Banks LNR, in 2003.
- The nearest record of smooth newt is from 1.34km to the south-east in 2011.
- The nearest record of common frog is of 28 frogs recorded 0.45km to the west in 2009.
- The closest record of slow worm to the Site is from an area located 1.51km to the north, within Darland Banks LRN, in 2001. Slow worm were recorded within the LNR more recently in 2013.
- The nearest record of grass snake is from 1.94km to the north in 2006.
- Adder are known to be present within Darland Banks LNR: the closest record is from 0.5km to the north of the Site in 2008, and the species has been recorded more recently in 2011.
- The nearest record of common lizard is from 0.32km to the north of the Site, within the LNR, in 2006. The species was recorded more recently in 2013.

3.2 Extended Phase 1 Habitat Survey

3.2.1 The Site consists of an arable field with a treeline along the southern boundary. The northern boundary of the Site is formed by an area of dense scrub which extends into Darland Banks LNR to the north. There are four silos and four dilapidated farm buildings within the north-eastern area of the Site. The habitats present on Site are shown within Figure 1, with further detail provided by way of specific target notes: these are denoted by the letters 'TN'. Photographs of selected target notes are provided in Figure 2.

Scrub

3.2.2 The northern boundary of the Site is formed by an area of dense scrub (TN5). The vegetation in the western area of the boundary is dominated by blackthorn *Prunus spinosa*, and there is a wider variety of species present within the eastern section, including wild privet *Ligustrum vulgare*, ash *Fraxinus excelsior* and dog-rose *Rosa canina*. The ground flora includes tufted hair-grass *Deschampsia cespitosa*, red fescue *Festuca rubra*, ragwort *Senecio jacobaea* and ivy *Hedera helix ssp. helix*.

Scattered trees

3.2.3 There is a bank of semi-mature trees which forms the southern Site boundary (TN3). The species present include hazel *Corylus avellana*, ash and species of maple *Acer* sp. The understorey is dominated by ivy, with frequent dog's-mercury *Mercurialis perennis*, cow parsley *Anthriscus sylvestris* and Lords-and-Ladies *Arum maculatum* also present. There is occasional bramble *Rubus fruticosus* sp. agg at the field edge.

3.2.4 In the western section of this boundary feature there are piles of garden and household waste such as a log and brash pile (S1) which measures approximately 8m wide by 8m long.

3.2.5 The eastern section of the southern boundary is formed by a very steep bank with scattered trees (TN3). There is a stone retaining wall in place which reinforces the bank.

Semi-improved grassland

3.2.6 To the east of building B4 there is an area of short, well managed grassland (TN7). The lawn appears to have been recently laid and contains perennial rye-grass *Lolium perenne*, Yorkshire-fog *Holcus lanatus*, yarrow *Achillea millefolium*, cut-leaved crane's-bill *Geranium dissectum*, creeping cinquefoil *Potentilla reptans*, dandelion *Taraxacum officinale* and ragwort.

Tall ruderal vegetation

3.2.7 In the centre of the southern boundary there is a small area of sparse tall ruderal vegetation (TN2). The species present include frequent common nettle *Urtica dioica*, creeping thistle *Cirsium arvense*, ivy and rosebay willowherb *Chamerion angustifolium*, as well as occasional great mullein *Verbascum thapsus*, mugwort *Artemisia vulgaris*, bristly oxtongue *Picris echioides*, cleavers *Galium aparine*, white dead-nettle

Lamium album, ribwort plantain *Plantago lanceolata*, dandelion, ragwort, cut-leaved crane's-bill and creeping buttercup *Ranunculus repens*.

3.2.8 The western field margin contains a strip of tall ruderal vegetation which is approximately 3m wide (TN4). The species present include bramble, common nettle, hogweed *Heracleum sphondylium*, creeping thistle, ivy, cow parsley, cleavers, Lords-and-Ladies, ash saplings and cock's-foot grass *Dactylis glomerata*. The northern section of the western boundary contains more scrub-like vegetation as well as denser tall ruderal species: traveller's joy *Clematis vitalba*, dog-rose, wild privet and hawthorn *Crataegus monogyna* are present, and there is a large area of rosebay willowherb with an understorey of common nettle near to the north-western corner of the Site.

Spoil

3.2.9 As well as the brash and log pile in the south-western area of the Site (S1), there is a large rubble pile in the southern area of the field (S2). The pile measures approximately 8m long by 6m wide, with an average height of 1m. It consists of building rubble such as bricks, concrete and tiles. The pile is fairly loosely compacted and is not vegetated.

Arable

3.2.10 The majority of the Site consists of an arable field (TN1). At the time of the survey the field had been recently planted with what appeared to be brussel sprouts.

Bare earth

3.2.11 The area around the silos and building B3 consists of bare earth (TN6) and hardstanding. The southern section of the eastern boundary bank (TN8) is also relatively bare, with only few ephemeral species present: these include perforate St John's-wort *Hypericum perforatum* and speedwell *Veronica* sp.

3.3 Bat Building Survey

Building B1 (small outhouse)

3.3.1 B1 is a small outhouse to the south of the silos which measures approximately 4m x 4m. The building is constructed from breezeblocks and has a flat corrugated metal sheet roof which has fallen in and has a large amount of ivy growing over it. The building is dilapidated, has no door and has a large hole between the walls and the roof; it is therefore heavily illuminated inside and draughty. No evidence of bats was found and the building has no potential to be used by day roosting bats.

Building B2 (small outhouse)

3.3.2 B2 is located to the west of the silos and is very similar to B1 in its construction. The outhouse is also very dilapidated and is more open to the elements and illuminated inside than B1. No evidence of bats was found and the building has no potential to support day roosting bats.

Building B3 (frame of barn)

3.3.3 Building B3 is what remains of an 'Atcost' barn: just the concrete and metal frame and part of the roof remain. The asbestos sheet roof has large holes throughout and there are no suitable dark crevices which have potential to support a bat roost. The building has no potential to support day roosting bats.

Building B4 (barn)

3.3.4 Building B4 is a large agricultural barn which has a metal frame and corrugated metal sheet walls. The roof is pitched on a north to south axis and is covered in asbestos sheeting. There are broken windows on all elevations of the building and two large double doors are open on the eastern side, making the inside of the barn heavily illuminated and exposed to the elements. Several pigeons were nesting in the barn at the time of the survey. Although the barn is easily accessible to bats, it is light and draughty during the day and the metal and asbestos building materials make the building unsuitable: these materials are not thermally stable and therefore would not provide a suitable bat roosting environment. No evidence of bats was found and the building has no potential to support day roosting bats.

Bat tree assessment

3.3.5 The semi-mature and mature trees within and adjacent to the Site boundaries were assessed for their potential to support day roosting bats. No features with potential to support a bat roost were identified, and the trees were all classed as having 'Low' or 'Negligible' potential to support bats. All of these trees are to be retained under the current proposals.

3.4 Protected Species Assessment

Amphibians

3.4.1 There are no ponds within the Site and a single waterbody within a 500m radius. This pond is located approximately 260m to the south of the Site and is a large lake located within Capstone Farm Country Park. The pond was not subject to a Habitat Suitability Index (HSI) assessment.

3.4.2 The Site contains a limited amount of suitable terrestrial habitat for great crested newt (GCN). The tall ruderal vegetation, treelines and scrub vegetation at the boundaries provide suitable terrestrial habitat for the species.

Reptiles

3.4.3 The Site contains suitable habitats for common species of reptile within the longer tall ruderal and scrub vegetation of the northern and western field margins, as well as within the brash and spoil piles. The arable field which dominates the Site is unsuitable for reptiles.

Badger

3.4.4 No signs of badger, such as setts, tracks, latrines or snuffle holes, were recorded within or adjacent to the Site during the survey. A mammal run and two holes were recorded within the treeline on the southern boundary: these were considered to have been made by a fox due to their shape and the presence of a fox hair in one of the holes.

Dormice

3.4.5 The Site contains limited potential to support dormice in the dense scrub which extends beyond the Site boundary and into Darland Banks to the north. The treeline which is present along the southern boundary of the Site is not considered suitable to support dormice and it is also isolated from other areas of suitable habitat in the wider area.

Breeding birds

3.4.6 The trees within the Site boundaries and the scrub along the northern boundary provide suitable nesting opportunities for breeding birds. Buildings B1, B2 and B4 are also accessible and have potential to be used by breeding birds.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 Overview

4.1.1 An Extended Phase I Habitat Survey and Bat Building Assessment have been completed at the Site at Brickfield, Darland Farm, Gillingham.

4.1.2 The proposals for the Site are yet to be finalised but will include the construction of approximately up to 60 residential dwellings with associated hard and soft landscaping. A single vehicular access point into the Site is proposed on the southern boundary where an existing access gate is located for the field; this will connect to Pear Tree Lane. The housing units and associated hard landscaping are proposed to be in the centre of the Site within the footprint of the arable field; the boundary habitats will all be retained.

Desk Study

4.1.3 The Site falls within the SSSI Impact Risk Zone for Medway Estuary and Marshes which is located approximately 3.5km to the north of the Site. Certain types of development within SSSI Impact Risk Zones require consultation with Natural England. However, consultation is required for residential applications of 100 units of more outside of existing settlements (DEFRA, 2016), and this project involves the construction of approximately up to 60 houses. Consultation is therefore not required.

4.1.4 The Local Nature Reserve (LNR) Darland Banks is located adjacent to the northern boundary of the Site. The ecological enhancement strategy (section 4.3) aims to enhance the Site and increase the ecological opportunities for those species known to be present within the LNR.

Extended Phase 1 Habitat Survey

4.1.5 No rare or nationally scarce botanical species or habitats were identified within the Site. The Site was found to support a limited diversity of native species associated with arable field margins and treelines. No invasive, non-native plant species were identified within the survey area.

4.2 Protected Species Assessment

Amphibians

4.2.1 There are no ponds within the Site boundary and a single waterbody within a 500m radius. The nearest waterbody to the Site was not subject to an HSI assessment. However, the lake is used for fishing and boating and is semi-artificial in nature with large scale landscaping works of the banks, walkways and paths. It is also known that the lake is used heavily by wildfowl. The desk study did not reveal any records of great crested newt from within a 3km radius of the Site. Due to the factors mentioned above, it is considered unlikely that GCN would use the waterbody.

4.2.2 The terrestrial habitat between this pond and the Site consists of a mixture of arable land, housing, grazing paddocks and scattered trees. The most significant barrier to newt movement are two 'A' roads between the Site and the waterbody: Capstone Road and Pear Tree Lane. It is therefore considered highly unlikely that, if GCN were present in this pond, they would cross this sub-optimal intervening habitat to reach the limited terrestrial habitat within the Site.

4.2.3 The Site contains a limited amount of terrestrial habitat for GCN with only the boundary habitats of the tall ruderal, trees and scrub being suitable. All of this suitable habitat is limited to the margins of the field which will be retained and enhanced under the proposals. As the potential for GCN to be present within the Site is considered to be very low, and the suitable terrestrial habitat will not be directly affected, no further surveys are required.

Reptiles

4.2.4 The Site contains limited suitable habitat for common species of reptile at the margins of the arable field. The majority of the Site is an arable field which holds no potential for use by reptiles. This field is well managed with the area of worked land being very close to the boundary, resulting in some areas (such as sections of the eastern and southern boundaries) having no field margin; the field edge runs up to the boundary fence or tree line. However, the western and northern boundaries of the site do contain dense scrub and tall ruderal species which provide suitable habitat for reptiles, and the brash and spoil piles are also suitable refugia features.

4.2.5 The Desk Study results showed that Darland Banks LNR, which is immediately adjacent to the Site, had records of adder, common lizard and slow worm from as recently as 2013. It is therefore likely that these species would be present within the boundary features of the Site at some point.

4.2.6 Under the current proposals the boundary features of the Site are to be retained and enhanced and these areas should be clearly demarcated with fencing to stop construction works entering these areas. The proposed access road will enter the Site at the southern boundary, where an already existing area of cleared habitat is located to provide access to the arable field. No further surveys for reptiles are therefore required. However, this is dependent on the Site being managed continually up until works on Site commence as a move away from the current agricultural land use would allow more favourable habitats to establish and reptile colonisation would happen quickly given the close proximity of the LNR. In addition, should the proposals be altered so that they involve the removal of any of the marginal vegetation, then further surveys for reptiles will be required. As a precaution the brash pile (S1) and large spoil pile (S2) should be dismantled under ecological supervision as these provide suitable refugia for reptiles. This should not be undertaken during the winter months.

4.2.7 The majority of the Site is an arable field which is currently unsuitable for reptiles. The ecological enhancement strategy (section 4.3) suggests ways in which the Site can be enhanced for reptiles and other wildlife as part of the development.

Badger

4.2.8 No signs of badger were recorded during the survey and no further surveys are recommended.

Dormice

4.2.9 The Desk Study showed records of dormice within the wider area, with the closest record being within woodland 0.42km away. The Site is isolated from this habitat with an arable field, residential properties and a road between. The area of the Site which is to be developed does not provide any suitable habitat for dormice as it is dominated by an arable field with narrow field margins. The tree lined banks on the southern boundary do not provide suitable habitat on their own and will be retained as part of the proposals. The scrub to the north of the Site contains limited potential to support dormice but will not be affected by the proposals; a 2m buffer is to be installed between this vegetation and the development. Therefore no further surveys are required.

Breeding Birds

4.2.10 The trees within and immediately adjacent to the Site on the southern and western boundaries provide suitable nesting habitat for breeding birds along with the dense scrub on the northern boundary. The arable field within the centre of the Site has low potential to support ground nesting birds; the field is used to grow brussel sprouts, whereas ground nesting birds tend to use cereal crops which provide both cover and food. The storage shed (B4) and small outhouses (B1 and B2) hold potential to support breeding birds. It was noted that B4 contained a number of nesting feral pigeons at the time of the survey.

4.2.11 All breeding birds, including the eggs and chicks, are protected from disturbance up until the eggs have hatched and the chicks have fledged. This means that if works start and an active nest is found, work will have to cease until the chicks have fledged. Under the current proposals, none of the boundary features will be removed. If any trees need to have arboricultural work carried out, and when the buildings are demolished, the work should be undertaken between October and February, which avoids the breeding bird season. If these dates do not coincide with planned schedules, the trees should be checked for active nests by a suitably experienced ecologist before works commence. If an active nest is found, works will have to be delayed until it is no longer in use.

Bats

4.2.12 There is no potential for day roosting bats to be present within the Site buildings. Furthermore, no evidence that suggest these buildings are used as a night roost or feeding perch were found. The trees within the

southern boundary are the most mature within the Site, however the majority of these are small and do not support features suitable for bats to use. Therefore no further emergence surveys are required of the buildings or trees.

4.2.13 In terms of the potential suitability of on-site habitats for bats then the arable field, lack of any water body and poor structure of boundary features would suggest the Site has 'Low' potential under the BCT Survey Guidelines (Collins 2016). The arable field that makes up the majority of the Site provides limited foraging and commuting habitat for bats. The trees on the southern boundary and dense scrub on the northern boundary provide some limited suitable foraging habitat but this would be for small numbers of bats. The outline proposals for the Site include the retention of these habitats.

4.2.14 However, the proposals need to be considered in relation to the wider zone of influence and what impacts the scheme will have on surrounding habitats in relation to bats. The Site lies between the Darland Banks LNR and the Capstone Farm Country Park which are both large areas of open green space in the local area. In addition, the desk study records have shown a number of maternity roosts near to the Site, including a serotine roost.

4.2.15 The Bat Survey Guidelines recommend that, for a site with "Low" suitability habitat for bats, three activity transects should be carried out: one per season in spring, summer and autumn, alongside static bat detector surveys. However, the guidelines also allow for judgement to be made as to whether activity surveys are actually necessary in low suitability habitats. For the subject Site there are no potential roosts within the Site and the quality of habitat within the Site is poor. However, due to the LNR adjoining the Site to the north and the presence of a serotine maternity roost close to the Site, a limited level of survey is recommended. This would consist of two transect surveys only, with the surveys being undertaken in late spring and early summer (between mid-May and early July). It is not considered that the proposals would have a significant impact on the local bat population due to the low quality habitat present. The purpose of the survey would be to gain further information on the local bat assemblage and determine if serotine bats use the northern boundary for commuting between foraging and roosting habitats. The information gathered would inform the detailed design of the proposals, particularly the lighting proposals, and to inform a more robust enhancement strategy for the Site which would inform the detailed planning application.

4.2.16 The landscaping and planting measures outlined in the ecological enhancement strategy (section 4.3) will improve the quality of the onsite habitat for foraging bats. In order to minimise the indirect impacts of the development on the bat foraging habitat which is present within the northern and southern Site boundaries, a sensitive lighting strategy should be implemented. This will ensure that any foraging or commuting within and near to the Site will be unaffected by the development. A detailed enhancement strategy will be drawn up once the results of the bat transect surveys are known and submitted as part of the detailed planning application for the Site, but general points to consider at this stage are detailed below:

Sensitive lighting strategy suggestions

4.2.17 The following points take into account current best practice guidance which should be incorporated into the lighting design (Bat Conservation Trust, 2012).

- Do not provide excessive lighting. Use only the minimum amount of light needed for safety.
- Minimise light spill. Eliminate any bare bulbs and any upward pointing light. The spread of light should be kept near to or below the horizontal; flat cut-off lanterns are best.
- Use narrow spectrum bulbs to lower the range of species affected by lighting. Use light sources that emit minimal ultra-violet light and avoid the white and blue wavelengths of the light spectrum to avoid attracting lots of insects. Lighting regimes that attract lots of insects result in a reduction of insects in other areas like parks and gardens that bats may be using for foraging.
- Lights should peak higher than 550nm or use glass lantern covers to filter UV light. White LED lights do not emit UV but have still been shown to disturb slow-flying bat species.
- Reduce the height of lighting columns; light at a low level reduces impact. However, higher mounting heights allow lower main beam angles, which can assist in reducing glare.
- For pedestrian lighting, use low level lighting that is as directional as possible and below 3 lux at ground level, but preferably below 1 Lux.
- Increase the spacing of lanterns.
- Limit the times that lights are on to provide some dark periods.
- Use lighting design software and professional lighting designers to predict where light spill will occur.
- Avoid using reflective surfaces under lights.

4.3 Ecological Enhancement Strategy

4.3.1 The National Planning Policy Framework (NPPF) sets out planning policies on the protection of biodiversity and geological conservation through the planning system. Section 11 of the National Planning Policy Framework sets out the Government's current planning policy in relation to conserving and enhancing the natural environment. The NPPF states that "the planning system should contribute to and enhance the natural and local environment by:

- Protecting and enhancing valued landscapes, geological conservation interests and soils;
- Recognising wider benefits of ecosystem services;
- Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures".

4.3.2 Regarding NPPF and the enhancement of the Site to benefit local wildlife, it is recommended that the measures detailed below are included in the scheme to maintain and enhance biodiversity. The enhancements are shown in relation to the development proposals within Figure 3.

4.3.3 The proposals for the Site should involve generous planting throughout the Site with the emphasis on the retention, protection and enhancement of the Site's boundary features which hold the Site's best biodiversity features. The northern, western and southern boundaries where existing trees, scrub and tall ruderal habitats are present are to be retained, with a 2m ecological buffer created between the Site development and these habitats.

4.3.4 Throughout the proposed development site any open areas which are part of the soft landscaping should be enhanced for biodiversity increase. The species which are chosen to be planted should be heavily fruiting and flowering native species (see Appendix 2). Native planting would benefit local wildlife by providing nest building opportunities and food sources for small mammals, birds and invertebrates, as well as foraging opportunities for reptiles and bats. Tree planting should incorporate native species such as hawthorn, blackthorn, hazel, pedunculate oak, *Prunus* species, rowan and wild service-tree, and herbaceous planting should include nectar-rich species with a selection chosen with staggered flowering times through spring, early summer and late summer. Species such as lavender, heathers and travellers joy are good nectar sources for bumblebees and other insects, and traveller's joy can also be used by birds to forage and nest in. Plants which should be planted to provide a suitable food source for the butterfly and moth species which are present within the adjacent LNR include: horseshoe vetch, common and greater bird's-foot-trefoil, white clover, black medick, bilberry, broom, buckthorn, common rock-rose, dogwood, fairy flax and salad burnet.

4.3.5 The Site's eastern boundary, where no existing habitat is present, should be enhanced with a native, locally sourced, species-rich hedgerow at the boundary line. It is recommended that native trees and shrub species are planted, such as hazel *Corylus avellana*, pedunculate oak *Quercus robur*, beech *Fagus sylvatica*, holly *Ilex aquifolium*, yew *Taxus baccata* and wild cherry *Prunus avium*. Other native species, particularly berry-bearing species such as rowan *Sorbus aucuparia*, wild service-tree *Sorbus torminalis*, alder buckthorn *Frangula alnus,* traveller's joy and guelder rose *Viburnum opulus* would also be valuable.

4.3.6 Log piles should be placed within the tall ruderal and scrub vegetation on the west and northern boundaries, where suitable reptile habitat was noted, in order to benefit reptiles and invertebrates. Approximately six log piles should be installed: three along the western boundary and three along the northern boundary.

4.3.7 A fence should be installed at the rear of the gardens along all boundaries of the Site in order to prevent the habitats at the field margins from becoming curtilage. The fence will protect the trees, tall ruderal vegetation, scrub and the proposed ecological buffers in these areas from being cut by residents, which will allow the vegetation to grow up and ensure that wildlife can still move freely along these green corridors and buffers.

4.3.8 13cm x 13cm gaps should be cut at the base of any close-board fencing to enable hedgehogs to move freely across gardens and the wider side. Artificial hedgehog refugia should be installed within the ecological buffers on the northern, southern and western boundaries: the 'Hogitat Hedgehog House' (available from the NHBS website) would be suitable. Three of these hedgehog houses should be installed: one within each of these boundaries.

4.3.9 Bat boxes should be installed on the larger trees in the southern boundary of the Site in order to provide roosting opportunities for bats. Four Schwegler 2F woodcrete bat box would be suitable for small bat species. A more detailed bat mitigation strategy will be provided based on the results of the transect surveys.

4.3.10 Bird boxes should be incorporated into the development. These could include nest boxes favoured by tits (*Schwegler 1B Nest Box* or similar), open-fronted boxes that are attractive to blackbirds and thrushes (*Vivara Pro Woodstone oval open nest box* or similar) and smaller nesting boxes favoured by robins or wrens and smaller birds (*Schwegler 2H Robin Box* and *Schwegler 1ZA wren roundhouse* or similar). The boxes should be installed on mature trees within the Site boundaries, as well as within the gardens of the new properties where suitable.

4.3.11 The UK house sparrow population is in severe decline, and developers and planners can contribute to helping this species recover by providing nest spaces in new buildings. This can be achieved by fixing colonial nest boxes to the external walls of the buildings, at least 3m above ground level and close to the eaves. The boxes should be installed on the eastern elevations in order to avoid strong sun or prevailing wind and rain. They should also not be placed directly above any windows or doors. Ready-made wooden or woodcrete boxes are widely available, such as *Schwegler 1SP Sparrow Terrace* or similar.

5.0 CONCLUSIONS

5.1 An Extended Phase 1 Habitat Survey and Bat Building Assessment have been undertaken of Brickfield, Darland Farm, Gillingham. The Site includes an arable field with a treeline along its southern boundary, a tall ruderal margin to the west and scrub to the north. There are four dilapidated farm buildings and four large silos within the north-eastern area of the Site. No rare or invasive botanical species were identified during the survey.

5.2 The Site contains suitable habitat for common species of reptile at the boundaries, particularly in the western and northern margins. There are records of adder, slow worm and common lizard in the adjacent Darland Banks Local Nature Reserve and it is considered likely that reptiles would be present within the northern and western boundaries of the Site. These boundary features are to be retained and an ecological buffer zone planted up in order to protect and enhance the existing habitats. No further surveys are therefore required, however if the proposals change to involve the removal of the boundary vegetation, further surveys to assess the presence or likely absence of reptiles will be required. The Site must also be continued to be managed to the current regime as a lapse in management will allow more suitable reptile habitat to extend over larger parts of the Site. The spoil pile and brash and log pile should be dismantled by hand and under ecological supervision in order to prevent killing or injuring any reptiles which may be present at the time of removal.

5.3 Recommendations have been made in relation to the timing of the demolition of the buildings, any branch cutting and/or removal of semi-mature trees. This should be undertaken outside of the breeding bird season, limiting this work to between October and February.

5.4 It has been recommended that two bat transect surveys are undertaken between mid-May and early July. The results of these surveys will inform a detailed lighting strategy and detailed ecological enhancement and mitigation plan for the development to be submitted as part of the detailed planning application.

5.5 An ecological enhancement strategy has been created for the Site (Figure 3). A 2m wide Ecological Buffer Zone will be retained around the boundary of the Site in order to protect and enhance the existing marginal habitats. Fences will be installed at the end of the new gardens in order to prevent this buffer from becoming curtilage. Enhancements include generous native planting, cutting holes at the base of fences to enable hedgehogs to move across gardens, the installation of log piles, hedgehog refugia and bat and bird boxes. It is considered that the ecological value of the Site will be greatly improved if these measures are incorporated.

REFERENCES

Collins J (ed.) 2016. *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edition) Bat Conservation Trust, London

DEFRA. 2016. MAGIC website. Available from: http://magic.defra.gov.uk/. February 2016.

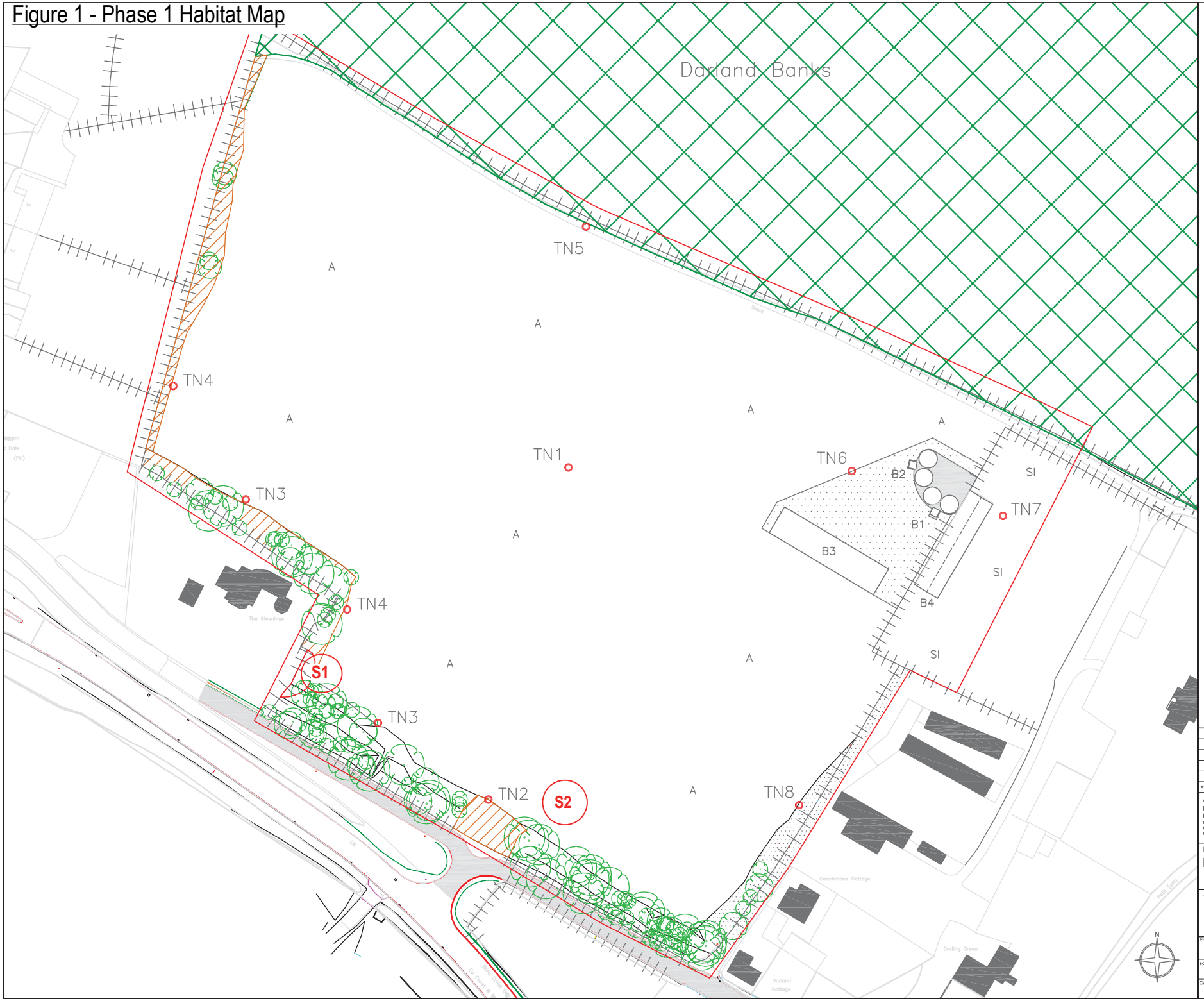
JNCC (Joint Nature Conservation Committee) 2004. *The Bat Workers Handbook.* JNCC, Peterborough.

JNCC (Joint Nature Conservation Committee) 2003. *Handbook for Phase I Habitat Survey. A technique for Environmental Audit.* JNCC, Peterborough.

Rose, F. 2006. *The Wild Flower Key.* Frederick Warne, London.

Stace, C. 2010. *New Flora of the British Isles. 3rd Edition*. Cambridge University Press.

Figure 1 - Phase 1 Habitat Map



Key

- Site Survey Area
- Tree
- Dense Scrub
- SI — Semi-Improved Grassland
- Tall Ruderal
- S — Spoil
- A — Arable Field
- Fence
- Building
- Hard Standing
- Bare Ground
- TN1 — Target Note 1

revision	description	date	checked by

Corylus Ecology Ltd, Unit A3, Speldhurst Business Park, Went Farm, Langton Road, Speldhurst, Kent TN3 0NR Corylus Ecology is the trading name of Corylus Ecology Ltd registered in England, No 5005553. Registered Office: Henwood House, Henwood, Ashford, Kent TN24 8DH

Project:
Brickfields, Darland Farm

Title:
Extended Phase 1 Habitat Plan

status	drawing no.			
	Figure 1			
scale	size	date	drawn	checked
NTS	**A3**	**01-04-2016**	**AW**	**BC**

CAD filename
Figure_1.dwg

Figure 2 - Annotated Photographs

TN1 - arable field

TN1 - arable field

TN2 - tall ruderal vegetation on bank

TN3 - southern boundary treeline

TN2 - southern boundary treeline (as seen from the south-eastern corner of the Site)

TN4 - tall ruderal vegetation along western Site boundary

TN4 - tall ruderal vegetation along western Site boundary

TN4 - tall ruderal vegetation along western Site boundary

TN5 - dense scrub along the northern Site boundary

S2 - rubble pile

S1 - log and brash pile

TN6 - bare earth and TN7 - semi-improved grassland. B4 can be seen adjacent to the grassland.

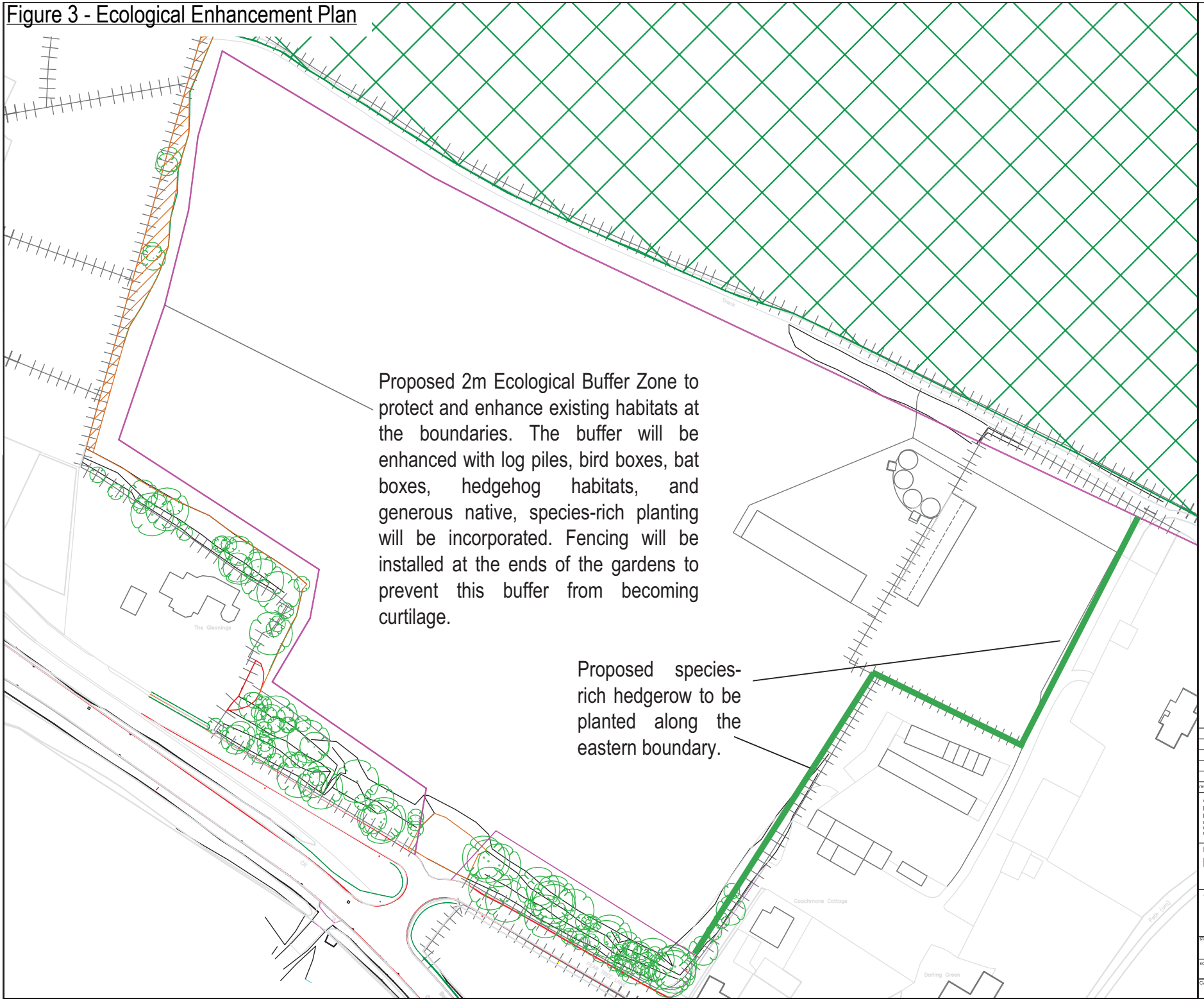
Building B1 (adjacent to silos)

Building B2 (adjacent to silos)

Frame of building B3

Interior of building B4

Figure 3 - Ecological Enhancement Plan


Proposed 2m Ecological Buffer Zone to protect and enhance existing habitats at the boundaries. The buffer will be enhanced with log piles, bird boxes, bat boxes, hedgehog habitats, and generous native, species-rich planting will be incorporated. Fencing will be installed at the ends of the gardens to prevent this buffer from becoming curtilage.
Proposed species-rich hedgerow to be planted along the eastern boundary.

Key

revision	description	date	checked by

Corylus Ecology Ltd, Unit A3, Speldhurst Business Park, Went Farm, Langton Road, Speldhurst, Kent TN3 0NR Corylus Ecology is the trading name of Corylus Ecology Ltd registered in England, No 5005553. Registered Office: Henwood House, Henwood, Ashford, Kent TN24 8DH

Project:
Brickfields, Darland Farm

Title:
Ecological Enhancement Plan

status		drawing no.			
		Figure 3			
scale	size	date	drawn	checked
NTS	A3	10-03-2016	AW	HL

CAD filename
Figure_1.dwg

Appendix 1 – Reptile Legislation

All British reptiles are afforded legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) largely as a consequence of a national decline in numbers due to habitat loss. Under the terms of the Act, it is an offence to intentionally kill or injure a reptile and accordingly in order to avoid committing an offence under the Act, appropriate mitigation techniques need to be incorporated for reptiles occurring within development sites. Mitigation methods for reptiles may include trapping and relocation of animals to a suitable receptor site, combined with the exclusion of the development site through the use of reptile fencing. Measures to enhance habitats for reptiles include the provision of hibernacula and appropriate management to improve foraging areas may also be required.

Mitigation for the more common British reptiles and amphibians does not require a licence from Natural England but would typically be agreed in consultation with the local planning authority.

Despite the range of their distribution and the diversity of habitats in which they may be found, the national status of the slow worm is not considered favourable. The slow worm is considered to have undergone a long term decline since the 1930's. Currently the largest threat has been identified as loss of habitat, in particular, due to a shift in planning policy towards the development of brown field sites (English Nature, 2004).

Royal Horticultural Society

Sharing the best in Gardening

RHS PERFECT FOR POLLINATORS WILDFLOWER LIST

SHORT GRASS, UP TO 15CMS

Ajuga reptans *bugle*	H
Bellis perennis *daisy*	H
Campanula rotundifolia *common harebell*	H
Hippocrepis comosa *horseshoe vetch*	H
Lotus corniculatus *bird's foot trefoil*	H
Potentilla anserina *silverweed*	H
Potentilla erecta *tormentil*	H
Potentilla reptans *creeping cinquefoil*	H
Primula veris *common cowslip*	H
Prunella vulgaris *selfheal*	H
Ranunculus repens *creeping buttercup*	H
Sanguisorba minor *salad burnet*	H
Taraxacum officinale *dandelion*	H
Thymus polytrichus *wild thyme*	H
Thymus pulegioides *large thyme*	H
Trifolium pratense *red clover*	H
Trifolium repens *white clover*	H
Veronica chamaedrys *germander speedwell*	H

HEDGES, SHRUB BORDERS AND WOODLAND EDGE

Acer campestre *field maple*	S or T
Alliaria petiolata *garlic mustard*	Bi
Allium ursinum *ramsons*	B
Aquilegia vulgaris *common columbine*	H
Ballota nigra *black horehound*	H
Berberis vulgaris *barberry*	S
Bryonia dioica *white bryony*	H/C
Buxus sempervirens *common box*	S

HEDGES, SHRUB BORDERS AND WOODLAND EDGE (cont.)

Campanula trachelium *nettle-leaved bellflower*	H
Clematis vitalba *old man's beard/traveller's joy*	C
Clinopodium vulgare *wild basil*	H
Cornus sanguinea *common dogwood*	S
Crataegus monogyna *common hawthorn*	S or T
Cytisus scoparius *common broom*	S
Digitalis purpurea *common foxglove*	Bi
Euonymus europaeus *spindle*	S
Fragaria vesca *wild strawberry*	H
Frangula alnus *alder buckthorn*	S
Galium mollugo *hedge bedstraw*	H
Galium odoratum *sweet woodruff*	H
Galium verum *lady's bedstraw*	H
Geranium robertianum *herb robert*	A/Bi
Geum urbanum *wood avens*	H
Hedera helix *common ivy*	C
Helleborus foetidus *stinking hellebore*	H
Hyacinthoides non-scripta *bluebell*	B
Ilex aquifolium *common holly*	T
Lamium album *white deadnettle*	H
Lamium galeobdolon *yellow archangel*	H
Ligustrum vulgare *wild privet*	S
Lonicera periclymenum *common honeysuckle*	C
Malus sylvestris *crab apple*	T
Malva sylvestris *common mallow*	H
Myosotis sylvatica *wood forget-me-not*	H
Primula vulgaris *primrose*	H
Prunus avium *wild cherry/gean*	T
Prunus padus *bird cherry*	T
Prunus spinosa *blackthorn/sloe*	S

Natural England states: You can legally collect small quantities of wildflower seed for your own use, but you must get permission from the land's owner, tenant or other authority, as necessary. Although seed collecting is allowed, you should not dig up native plants – many rare species are protected by law. You can collect seed of even rare plants, but cannot sell/trade seed or progeny.

KEY

T = tree; **S** = shrub; **C** = climber; **B** = bulbs and corms; **A** = annual; **Bi** = biennial; **H** = herbaceous perennial

Royal Horticultural Society

Sharing the best in Gardening

RHS PERFECT FOR POLLINATORS WILDFLOWER LIST

HEDGES, SHRUB BORDERS AND WOODLAND EDGE (cont.)

Ranunculus ficaria *lesser celandine*	H
Rhamnus catharticus *Purging buckthorn*	S
Rosa canina *Dog rose*	S
Rosa rubiginosa *sweet briar*	S
Rubus fruticosus *blackberry*	S
Salix atrocinerea *grey willow*	S - male forms best
Salix caprea *goat willow*	S - male forms best
Sanicula europaea *sanicle*	H
Sedum telephium *orpine*	H
Silene dioica *red campion*	H
Silene latifolia subsp. **alba** *white campion*	H
Smyrnium olusatrum *alexanders*	Bi
Sorbus aria *common whitebeam*	T
Sorbus aucuparia *rowan/mountain ash*	T
Sorbus torminalis *wild service tree*	T
Stachys officinalis *betony*	H
Stellaria holostea *greater stitchwort*	H
Symphytum officinale *common comfrey*	H
Teucrium scorodonia *wood sage*	H
Tilia cordata *small-leaved lime*	T
Viburnum lantana *common wayfaring tree*	S
Viburnum opulus *guelder rose*	S
Vicia cracca *common tufted vetch*	H
Vicia sativa *common vetch*	H

DISTURBED GROUND

Agrostemma githago *corncockle*	A
Anchusa arvensis *bugloss*	A
Anthemis arvensis *corn chamomile*	A
Anthemis cotula *stinking chamomile*	A
Centaurea cyanus *cornflower*	A
Cichorium intybus *chicory*	H
Dipsacus fullonum *common teasel*	Bi
Echium vulgare *viper's bugloss*	Bi
Glebionis segetum *corn marigold*	A
Iberis amara *wild candytuft*	A
Lamium amplexicaule *Henbit deadnettle*	A
Matricaria recutita *scented mayweed*	A

DISTURBED GROUND (cont.)

Mentha arvensis *corn mint*	H
Myosotis arvensis *field forget-me-not*	A/H
Myosotis arvensis *Common forget-me-not*	A
Onopordum acanthium *cotton thistle*	Bi
Papaver dubium *long-headed poppy*	A
Papaver rhoeas *common poppy*	A
Sinapis arvensis *charlock*	A
Sonchus arvensis *perennial sowthistle*	H
Tussilago farfara *coltsfoot*	H
Verbascum thapsus *great mullein*	Bi

FLOWER BEDS

Calluna vulgaris *heather / ling*	S
Erica ciliaris *Dorset heath*	S
Erica cinerea *bell heather*	S
Erica tetralix *cross-leaved heath*	S

LONG GRASS, ABOVE 50CMS

Arctium minus *lesser burdock*	Bi
Carduus crispus *welted thistle*	Bi
Carduus nutans *musk thistle*	Bi
Chamaenerion angustifolium *rosebay willowherb*	H
Cirsium arvense *creeping thistle*	H
Cirsium vulgare *spear thistle*	Bi
Conopodium majus *pignut*	H
Cynoglossum officinale *hound's tongue*	H
Daucus carota *wild carrot*	Bi
Geranium pratense *meadow cranesbill*	H
Heracleum sphondylium *hogweed*	Bi
Hypericum perforatum *perforate St John's wort*	H
Knautia arvensis *field scabious*	H
Lathyrus pratensis *meadow vetchling*	H
Pastinaca sativa *wild parsnip*	Bi
Succisa pratensis *devil's bit scabious*	H
Tanacetum vulgare *tansy*	H

KEY

T = tree; **S** = shrub; **C** = climber; **B** = bulbs and corms; **A** = annual; **Bi** = biennial; **H** = herbaceous perennial

Royal Horticultural Society

Sharing the best in Gardening

RHS PERFECT FOR POLLINATORS WILDFLOWER LIST

LONG GRASS, ABOVE 50CMS (cont.)

Thalictrum flavum *meadow rue*	H
Tragopogon pratensis *goat's beard*	Bi
Verbascum nigrum *dark mullein*	Bi/H

MEDIUM HEIGHT GRASS, UP TO 50CMS

Achillea millefolium *common yarrow*	H
Achillea ptarmica *sneezewort*	H
Agrimonia eupatoria *agrimony*	H
Anthyllis vulneraria *kidney vetch*	H
Armeria maritima *thrift/sea pink*	H
Blackstonia perfoliata *yellowwort*	A
Campanula glomerata *clustered bellflower*	H
Centaurea nigra *common knapweed/hardheads*	H
Centaurea scabiosa *greater knapweed*	H
Centaurium erythraea *common centaury*	Bi
Echium vulgare *viper's bugloss*	Bi
Erigeron acris *blue fleabane*	A/H
Filipendula vulgaris *dropwort*	H
Helianthemum nummularium *common rockrose*	H
Hypochaeris radicata *cat's ear*	H
Inula conyzae *ploughman's spikenard*	H
Leontodon autumnalis *autumn hawkbit*	H
Leontodon hispidus *rough hawkbit*	H
Leucanthemum vulgare *ox-eye daisy*	H
Linaria vulgaris *common toadflax*	H
Malva moschata *musk mallow*	H
Ononis repens *common restharrow*	H
Origanum vulgare *wild marjoram*	H
Pilosella officinarum *mouse-ear hawkweed*	H
Ranunculus acris *meadow buttercup*	H
Ranunculus bulbosus *bulbous buttercup*	H
Reseda lutea *wild mignonette*	Bi/H
Rhinanthus minor *yellow rattle*	A
Scabiosa columbaria *small scabious*	H
Silene vulgaris *bladder campion*	H
Solidago virgaurea *goldenrod*	H

PONDS, POND MARGINS AND WET SOILS

Alisma plantago-aquatica *water plantain*	H
Angelica sylvestris *wild angelica*	Bi
Butomus umbellatus *flowering rush*	H
Caltha palustris *marsh marigold*	H
Cardamine pratensis *cuckoo flower/lady's smock*	H
Cirsium dissectum *meadow thistle*	H
Epilobium hirsutum *great willowherb*	H
Eupatorium cannabinum *hemp agrimony*	H
Filipendula ulmaria *meadowsweet*	H
Galium palustre *marsh bedstraw*	H
Geum rivale *water avens*	H
Hypericum tetrapterum *square-stalked St John's wort*	H
Iris pseudacorus *yellow iris*	H
Lotus pedunculatus *greater bird's-foot trefoil*	H
Lychnis flos-cuculi *ragged robin*	H
Lycopus europaeus *gypsywort*	H
Lysimachia nummularia *creeping Jenny*	H
Lysimachia vulgaris *yellow loosestrife*	H
Lythrum salicaria *purple loosestrife*	H
Mentha aquatica *water mint*	H
Menyanthes trifoliata *bogbean*	H
Myosotis scorpioides *water forget-me-not*	H
Nasturtium officinale *common watercress*	H
Nuphar lutea *yellow water lily*	H
Nymphaea alba *white water lily*	H
Oenanthe aquatica *fine-leaved water dropwort*	A/Bi
Oenanthe crocata *hemlock water dropwort*	H
Persicaria amphibia *amphibious bistort*	H
Persicaria bistorta *common bistort*	H
Polemonium caeruleum *Jacob's ladder*	H
Pulicaria dysenterica *common fleabane*	H
Ranunculus aquatilis *common water crowfoot*	A/H
Ranunculus flammula *lesser spearwort*	H
Ranunculus fluitans *river water crowfoot*	H
Ranunculus lingua *greater spearwort*	H
Ranunculus sceleratus *celery-leaved buttercup*	A
Sagittaria sagittifolia *arrowhead*	H
Sanguisorba officinalis *great burnet*	H
Scrophularia auriculata *water figwort*	H

KEY

T = tree; **S** = shrub; **C** = climber; **B** = bulbs and corms; **A** = annual; **Bi** = biennial; **H** = herbaceous perennial

Royal Horticultural Society

Sharing the best in Gardening

RHS PERFECT FOR POLLINATORS WILDFLOWER LIST

PONDS, POND MARGINS AND WET SOILS (cont.)

Scutellaria galericulata *common skullcap*	H
Stachys palustris *marsh woundwort*	H
Valeriana officinalis *common valerian*	H
Veronica beccabunga *brooklime*	H

SHINGLE/GRAVEL GARDEN

Cakile maritima *sea rocket*	A
Crambe maritima *sea kale*	H
Crithmum maritimum *rock samphire*	H
Eryngium maritimum *sea holly*	H
Glaucium flavum *yellow horned-poppy*	Bi/H
Sedum acre *siting stonecrop*	H
Sedum album *white stonecrop*	H
Silene uniflora *sea campion*	H

KEY

T = tree; **S** = shrub; **C** = climber; **B** = bulbs and corms; **A** = annual; **Bi** = biennial; **H** = herbaceous perennial